Appendix A: Troubleshooting

Diagnosing Switch Indicators

The CheetahSwitch can be easily monitored through its comprehensive panel indicators. These indicators assist the network manager in identifying problems the switch may encounter. This section describes common problems you may encounter and possible solutions.

Symptom: Link indicator does not light up (green) after making a connection.

Cause: Network interface (e.g., a network adapter card on the attached device), network cable, or switch port is defective.

Solution: Verify that the switch and attached device are powered on. Be sure the cable is plugged into both the switch and corresponding device. Verify that the proper cable type is used and its length does not exceed specified limits (100m or 328ft). Check the adapter on the attached device and cable connections for possible defects. Replace the defective adapter or cable if necessary.

Symptom: PWR indicator does not light up (green) after power on.

Cause: Defective power outlet, power cord, or internal power supply.

Solution: Check the power outlet by plugging in another device that is functioning properly. Check the power cord with another device. If these measures fail to resolve the problem, have the unit's power supply replaced by an qualified Accton distributor.

System Diagnostics

Power and Cooling Problems

If the PWR indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet, power cord, or internal power supply as explained in the previous section. However, if the unit powers off after running for a while, check for loose power connections, power losses or surges at the power outlet, and verify that the fan on back of the unit is unobstructed and running prior to shutdown. If you still cannot isolate the problem, then the internal power supply may be defective. In this case, contact your Accton distributor for assistance.

Installation

Verify that all system components have been properly installed. If one or more components appear to be malfunctioning (e.g., the power cord or network cabling), test them in an alternate environment where you are sure that all the other components are functioning properly.

Transmission Mode

When you use Ports 1 ~ 8 (16), check the DIP switch on the rear panel to ensure that each port is set to the same transmission mode used by the attached device (i.e., half or full duplex).

The switch uses auto-negotiation to set the transmission mode for Ports 9/10 (17/18). If the attached device does not support auto-negotiation, and you need to run it at full duplex, then you should upgrade it to a newer version that does support auto-negotiation.

Cabling

1. Verify that the cabling type is correct. Be sure all cable connectors are securely seated in the required ports. Use 100Ω straight-through cable for all standard connections. Use Category 5 cable for 100 Mbps Fast Ethernet connections, or Category 3, 4 or 5 cable for standard 10 Mbps Ethernet connections.
2. Make sure all devices are connected to the network. Equipment may have been unintentionally disconnected from the network.
3. When cascading two devices using RJ-45 station ports at both ends of the cable (i.e., not an MDI port), make sure a crossover cable is used. Crossover cable should only be used if a daisy-chain port (i.e., Ports 8/10 or 16/18) is not available.

External Adapters

Make sure the network interface hardware and software drivers for the attached devices are functioning properly. Check the adapter cards and associated drivers used in any attached workstation or server.

Physical Configuration

If problems occur after altering the network configuration, restore the original connections, and try to track the problem down by implementing the new changes, one step at a time. Ensure that cable distances and other physical aspects of the installation comply with recommendations (Chapter 2).

System Integrity

As a last resort verify the switch's integrity with a power-on reset. Turn the power to the switch off and then on several times. If the problem still persists and you have completed all the preceding diagnoses, then contact your Accton distributor for further assistance. (Refer to Appendix E.)

Appendix B: Port and Cable Assignments

RJ-45 Port

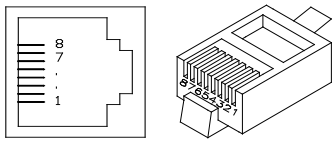


Figure B.1
RJ-45 Connector
(on the Switch Side)

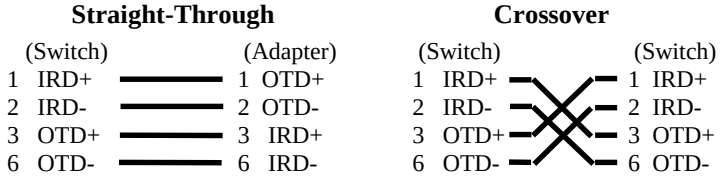
RJ-45 station ports (MDI-X) can be attached to any devices which use a standard network interface (e.g., a workstation, server, bridge or router). RJ-45 daisy-chain ports (MDI) can be cascaded to a station port on similar networking devices (e.g., another switch or hub). Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100Ω Category 3, 4 or 5 cable for 10 Mbps connections or 100Ω Category 5 cable for 100 Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

Pin	Assignment[1] (Station Ports 1 - 10/16)	Assignment[2] (Daisy-Chain Ports 8/10 & 16/18)
1	Input Receive Data +	Output Transmit Data +
2	Input Receive Data -	Output Transmit Data -
3	Output Transmit Data +	Input Receive Data +
6	Output Transmit Data -	Input Receive Data -
4,5,7,8	Not Used	Not Used

1: Applies to Ports 8/10 and 16/18 when Daisy-Chain switch is set to MDI-X
2: Applies to Ports 8/10 and 16/18 when Daisy-Chain switch is set to MDI

Table B.1 RJ-45 Pin Assignments

Schematics for both straight and crossover twisted-pair cable are shown below.



Appendix C: Specifications

Product Specifications

Basic Criteria	Access Method	CSMA/CD, 10 Mbps and 100 Mbps
	Standards Conformance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX
	Communication Rate	10 Mbps on Ports 1 - 8 (16), 10 or 100 Mbps on Ports 9/10 & 17/18.
	Communication Mode	Full duplex or half duplex; manual setting for Ports 1-8(16), and auto-negotiation for Ports 9/10 & 17/18
	Media Supported	*10BASE-T* 100Ω Category 3,4,5 twisted-pair, *100BASE-TX* 100Ω Category 5 twisted-pair cable
	Number of Ports	8(16) 10BASE-T and 2 100BASE-TX ports (1 10BASE-T and 1 100BASE-TX port can be set at MDI-X or MDI)
	Indicator Panel	LEDs for monitoring port link, collision, activity, transmission speed, and transmission mode
	Dimensions	330mm x 204mm x 44mm (13" x 8" x 1.7")
	Input Power	Full range power input: 100 to 240V (±10%) 50 to 60 Hz (±3Hz)
	Power Consumption	ES2010: 0.16 Amp at 100 VAC 0.10 Amp at 240 VAC ES2018: 0.26 Amp at 100 VAC 0.12 Amp at 240 VAC
	Temperature	0°C to 40°C (32 to 104°F) Standard Operating
	Humidity	10% to 90% (Noncondensing)
	Certification	CE Mark
	Emissions	FCC Class A, VCCI Class A, CISPR Class A
	Immunity	IEC 1000-4-2/3/4/6
	Safety	UL, CSA, TÜV/GS
Switching Criteria	Network Bridging Function	filtering, forwarding and learning
	Switching Method	store and forward
	Address Table	8K entries per system
	Queue Buffer	1M shared memory for 10 Mbps ports (ES2010) 2M shared memory for 10 Mbps ports (ES2018), 1M bytes shared memory for 100 Mbps ports

Appendix D: Regulatory Standards Compliance

EMI Certification

FCC Class A

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are required to correct the interference.

You may use unshielded twisted-pair (UTP) for RJ-45 connections – Category 3 or greater for 10 Mbps connections, and Category 5 for 100 Mbps connections.

Warnings

1. Wear an anti-static wrist strap or take other suitable measures to prevent electrostatic discharge whenever handling this equipment.
2. When connecting this device to a power outlet, connect the field ground lead on the tri-pole power plug to a valid earth ground line to prevent electrical hazards.

Canada Department of Communications - Class A

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus”, ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numérques”, NMB-003 édictée par le ministère des Communications.

VCCI Class A Compliance

この装置は、情報技術装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CE Mark Declaration of Conformance (for EMI and Safety)

This is to certify that this product complies with ISO/IEC Guide 22 and EN45014.
It conforms to the following specifications:

EMC:	EN55022(1988)/CISPR-22(1985)	class A
	EN60555-2(1995)	class A
	EN60555-3	
	IEC1000-4-2(1995)	4kV CD, 8kV AD
	IEC1000-4-3(1995)	3V/m
	IEC1000-4-4(1995)	1kV - (power line) 0.5kV - (signal line)
	IEC 1000-4-6(1995)	3Vrms

This product complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

Warning!
Do not plug a phone jack connector in the RJ-45 port. This may damage this device.

Les raccordeurs ne sont pas utilisé pour le système téléphonique!

Safety Compliance

Underwriters Laboratories Inc.

Important! Before making connections, make sure you have the correct Cord Set. Check it (read the label on the cable) against the following specification list.

Operating Voltage	Cord Set Specifications
120 Volts	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG
	Type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Parallel blade, grounding type attachment plug rated 15A, 125V
240 Volts (For North America)	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG
	Type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Tandem blade, grounding type attachment plug rated 15A, 125V
240 Volts (For Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm^2
	IEC-320 receptacle
	Male plug rated 6A, 250V

The unit will automatically select the setting that matches the input voltage connected. Therefore, no additional adjustments are necessary when connecting it to any input voltage within the range marked on the rear panel.

Sicherheitshinweise

1. Die Steckdose muß sich in der Nähe des Gerätes befinden und leicht zugänglich sein.
2. Zum Reinigen den Stecker aus der Steckdose ziehen. Beim Reinigen keine Flüssigreiniger oder Sprays verwenden, sondern ein angefeuchtetes Tuch.
3. Das produkt gerät nicht in Naßräume oder in der Nähe von Wasser benutzen, wie z.B. Badezimmer, Schwimmbad, Spülbecken usw.. Das Eindringen von Wasser kann zur Zerstörung des Gerätes führen.
4. Das produkt gerät nicht auf einer unstabilen Unterlage, wie z.B. Rollwagen, Gestell usw., aufstellen. Es könnte herunterfallen und Verletzungen oder Beschädigungen von Mensch und Gerät verursachen.
5. Die Belüftungsöffnungen nicht blockieren oder auf falscher Oberfläche, wie Bett, Sofa usw., stellen. Durch die Blockierung kann es zur Zerstörung des Gerätes durch Überhitzung kommen.
6. Versuchen Sie niemals dieses Gerät selbst zu warten, da beim Öffnen oder Abnehmen des Gehäuses die Gefahr eines elektrischen Schlages besteht.
7. Keine Gegenstände auf das Anschlußkabel stellen, damit es nicht durch scharfe Kanten zerstört werden kann.
8. Keinerlei Gegenstände durch die Öffungen in das Gerät stecken, da es dadurch sonst zu Kurzschlässen kommen kann.
9. Bei Störungen des Gerätes den Wartungsdienst verständigen.
10. Bei Reperaturen dürfen nur Orginalersatzteile oder Bauteile mit gleichen Eigenschaften verwendet werden. Andere Bauteile können Feuer, elektrischen Schlag oder andere Gefahren verursachen.
11. Nach Beendigung von Wartungsarbeiten oder Reperaturen durch den Kundendienst sollte die Sicherheitsprüfung durchgeführt werden.
12. Bei längerem Stillstand des Gerätes, ist diese von der Versorgungsspannung zu trennen. Dies verhindert eine Beschädigung des Gerätes durch eine Überspannung in der Zuleitung.
13. Der arbeitsplatzbezogene Lärmschutzpegel nach DIN 45 635 ist kleiner 70dB (A).

Appendix E: Product Support Services

Product Registration

Fill in the Owner Registration Card and mail it to Accton Technology Corporation. Accton will keep your record and inform you of any new Accton unit developments.

Problem Report

If problems occur during unit operation, please check the adapter configuration settings, cables, connectors, network terminators, hardware compatibility and other network components.

Write a description of the problem, including what problems occurred, when they occurred, duration of the problems, the unit number, serial number, hardware, software and the DOS version that you are using. Then contact your dealer or Accton Technology Corporation for assistance.

Hardware Repair Service

You must get an RMA (Return Materials Authorization) number before returning any hardware for repair. To obtain this number please inform Accton of your company name, address, unit name and model number, contact person, telephone number, and a problem description list. If your unit is under repair warranty you must also give your purchase date. Carefully pack your hardware. If possible, use the original carton. Mark the RMA number on the carton and send it to your dealer.

After repair, Accton will inform you of the date of delivery and the exact amount due. Please send the payment by T/T (Telegram Transfer), and Accton will send you the fixed component after receiving payment. With or without warranty, if the hardware is found to be free of defects, you will only be charged for testing and handling.

Bulletin Board Service (BBS)

- In countries other than the U.S., call 886-3-5770-654 to reach Accton Taiwan's modem line. Modems with 14400 through 2400 baud are supported. Choose 8 data bits, 1 stop bit and no parity. Standard VT100 terminal emulation is supported
- In the United States, call 408-452-8828 to reach the Accton USA's BBS line. Modems with 14400 through 2400 baud are supported. Choose 8 data bits, 1 stop bit and none parity. Standard VT100 terminal emulation is supported.

Interactive Fast Fax (U.S.A. Office)

Printed technical documentation can be faxed to your fax machine, 24-hours a day.

- Call 408-452-8811 to reach Accton's interactive Fast Fax service. You will need a touch-tone phone and a fax machine (or equivalent). Choose document 911 for a listing of technical bulletins.

Technical Support

Your dealer or installer is the person who understands your network and Accton units. If neither is available to help you, Accton technical support engineers are available by fax, mail or phone.

- Send your technical questions by fax to:

  International Headquarters: 886-3-5770-267
  USA Headquarters: 408-452-8988
- To obtain software upgrades connect via ftp to ftp.accton.com.tw
- Send your technical questions by email to support@accton.com.tw

- Mail your technical questions to:

International Headquarters	**USA Headquarters**
Accton Technology Corporation Attn: Technical Support No. 1 Creation Road III Science-based Industrial Park Hsinchu 300, Taiwan, R.O.C.	Accton Technology Corporation Attn: Technical Support 1962 Zanker Road, San Jose, CA 95112, U.S.A.

During local business hours, call:

International Headquarters	**USA Headquarters**
(Monday through Friday, 8 am to 6 p.m.): 886-3-5770-270	(Monday through Friday, 7 am to 5 p.m. Pacific Time): 408-452-8900 or 800-926-9288

Limited Warranty

Accton warrants to the original owner that the product delivered in this package will be free from defects in material and workmanship for the lifetime of the product. For the warranty to apply, you must register your purchase by returning the registration card indicating the date of purchase and including proof of purchase. There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty does not cover the product if it is damaged in the process of being installed. Accton recommends that you have the company from whom you purchased this product install it.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE. ACCTON SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. ACCTON NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY OTHER LIABILITY.

Customer Remedies

If the product is found to be defective within the first two years from the later of date of purchase or date of manufacture, Accton's entire liability and your exclusive remedy for any breach of warranty, shall be, at its option, to repair or replace the product at no charge except as set forth below. If the product is found to be defective after two years from the later of date of purchase or date of manufacture,

Accton will charge a process and handling fee, provided that you deliver the product along with a return material authorization (RMA) number either to the company from whom you purchased it or to Accton. Accton warrants the repaired or replaced product to be free from defects in material and workmanship for the remainder of the original product's warranty period. Consumable components are warranted only for two years.

Return Process

Before you may return any Accton product to Accton, you must request an RMA number by calling, faxing or writing Accton's Service Department at the address listed below. If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Accton may replace or repair the product with either a new or reconditioned product, and the returned product becomes Accton's property. At Accton's sole discretion, Accton will issue a credit for either a comparable replacement Accton product or credit the original purchase price towards the purchase of any Accton product for any unrepairable, defective product.

This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing.

ACCTON SHALL NOT BE HELD LIABLE FOR ANY LOSS OF PROFITS, LOSS OF USE, INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES CAUSED BY THE USE OF THIS PRODUCT OR INABILITY TO USE IT, EVEN IF THE COMPANY OR ACCTON HAS BEEN ADVISED OF SUCH LIABILITY OR OTHER SPECIAL CLAIMS.

If you purchased this product in the USA, be aware that some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this product are covered by Accton's Limited Lifetime Warranty for this product. The product may contain fully tested, recycled parts, warranted as if new.

For warranty information:
All territories except North and South America:
Accton Technology Corporation, International Headquarters
No. 1, Creation Rd. III, Science-based Industrial Park, Hsinchu 300, Taiwan, R.O.C.
Phone: 886-3-5770-270 Fax: 886-3-5770-267 BBS: 886-3-5770-654
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Fax: 886-2-577-0816

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FAST FAX: 408-452-8811

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Accton Japan,
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2-1-1, Minatomirai 2-Chome,
Nishi-Ku, Yokohama,
220-81, Japan
Phone: 81-45-224-2332
Fax: 81-45-224-2331

Ordering Information

- **CheetahSwitch Workgroup-2010** (Model No. ES2010) — Ethernet Switch with **8** 10BASE-T and **2** 10BASE-T/100BASE-TX Ports
- **CheetahSwitch Workgroup-2018** (Model No. ES2018) — Ethernet Switch with **16** 10BASE-T and **2** 10BASE-T/100BASE-TX Ports

Glossary

10BASE-T

IEEE's specifications for running 10 Mbps Ethernet using twisted-pair cable (100Ω STP or UTP). The maximum length of cable for a point-to-point connection is 100 meters (328 feet), and the maximum number of nodes is 1024.

100BASE-TX

IEEE's specifications for 100 Mbps Ethernet using twisted-pair cable (Category 5 100Ω STP or UTP). The maximum length of cable for a point-to-point connection is 100 meters (328 feet).

Bus Topology

A "broadcast" arrangement in which all network stations receive the same message through the cable at the same time.

Collision

A condition in which two packets transmitted over a medium interfere with each other. Their interference makes both signals unintelligible.

Configuration

The way to set up a computer, server, or local area network.

Connection

A logical binding between two or more users of an interconnection service.

Daisy-Chain Port

An MDI RJ-45 port used to cascade compatible devices in a daisy-chain configuration using straight-through twisted-pair cable. To cascade two devices, either run a connection from the daisy-chain port on one device to a station port on the other device, or cascade the two devices by running crossover cable between MDI-X station ports on both devices.

DIP Switch

A two position switch used to select specific device functions. A DIP switch is used on the rear panel of the CheetahSwitch to select the transmission mode (i.e., half or full duplex).

Ethernet

A network communication system developed and standardized by DEC, Intel, and Xerox, using baseband transmission, CSMA/CD access, logical bus topology, and coaxial cable. The successor IEEE 802.3 standard provides for integration into the OSI model and extends the physical layer and media with repeaters and implementations that operate on fiber optics, baseband, and twisted-pair.

Fast Ethernet

100 Mbps network communication system based on Ethernet and the CSMA/CD access method.

IEEE 802.3 Standard

Standard for the physical and electrical connections in local area networks developed by the IEEE (Institute of Electrical and Electronics Engineers). The IEEE 802.3u standard covers these same issues for 100 Mbps networks.

LED

Light emitting diode used on the CheetahSwitch for monitoring a device or network condition.

Local Area Network (LAN)

A group of interconnected computers and support devices.

Media Access Control (MAC)

A portion of the networking protocol that governs access to the transmission medium, facilitating the exchange of data between network nodes.

MDI Port (Medium Dependent Interface)

MDI is the IEEE standard for the twisted-pair interface to 10BASE-T (or 100BASE-TX) . This RJ-45 port can be used with straight-through cable to connect the switch to a network interconnection device, such as another switch or hub. Pin-out assignments are shown in Appendix B.

MDI-X Port (Medium Dependent Interface - Crossed)

This RJ-45 port, which crosses the receive and transmit signals internally, can be used with straight-through cable to connect the switch to any device that has a standard network interface (e.g., workstation, server, bridge or router). Pin-out assignments are shown in Appendix B.

RJ-45 Connector

Most common terminator for twisted-pair wiring.

Star Topology

Physical connections for RJ-45 ports are limited to a star configuration (i.e., similar to a hub and spoke arrangement). This topology also requires that only one path exists between any two nodes, and that data transmitted by any node is concurrently available to all other devices within the same segment (i.e., immediate collision domain).

Station Port

MDI-X ports which are used for connecting the switch to any workstation or server that has a properly installed network adapter card. (For RJ-45 ports 8 and 10 on the CheetahSwitch Workgroup-2010 and Ports 16 and 18 on the CheetahSwitch Workgroup-2018, the selector switch must be set to MDI-X.)

STP (Shielded Twisted-Pair)

Twisted-pair wire covered with an external aluminum-foil or woven-copper shield designed to reduce excessive noise pick up or radiation. The STP cable referred to in this manual is also sometimes called screened twisted-pair (ScTP). Its impedance is 100Ω and has the same pin assignment as UTP. This cable should not be confused with the older 150Ω cable type designed by IBM.

UTP (Unshielded Twisted-Pair)

Cable composed of two insulated wires twisted together to reduce electrical interference; used in common telephone cord.

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